

District Energy



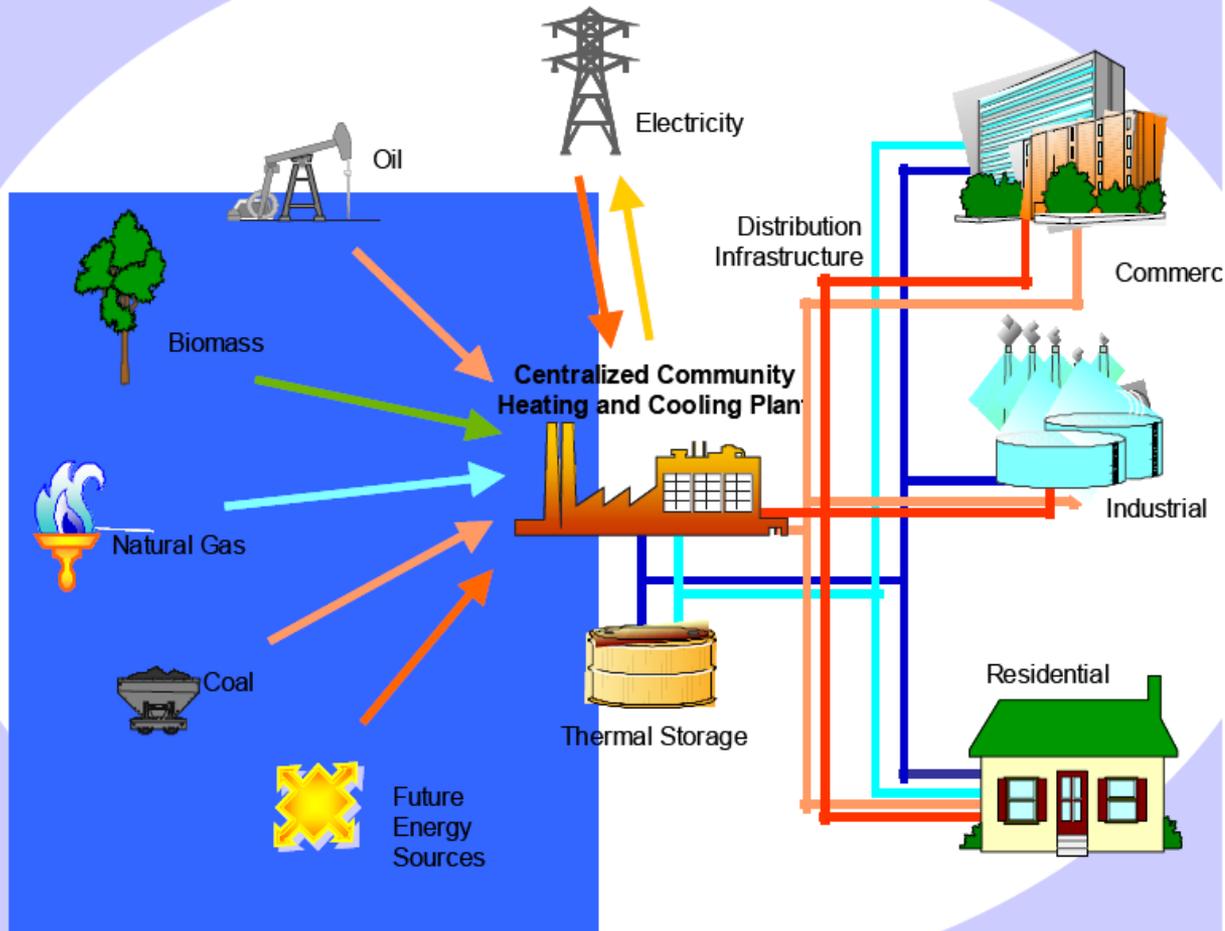
**Barry Thompson Energy and
Environmental Officer, Engineering Dept.
November 20, 2012**

What is District Energy?

District Energy can be any of a number of different centralized configurations

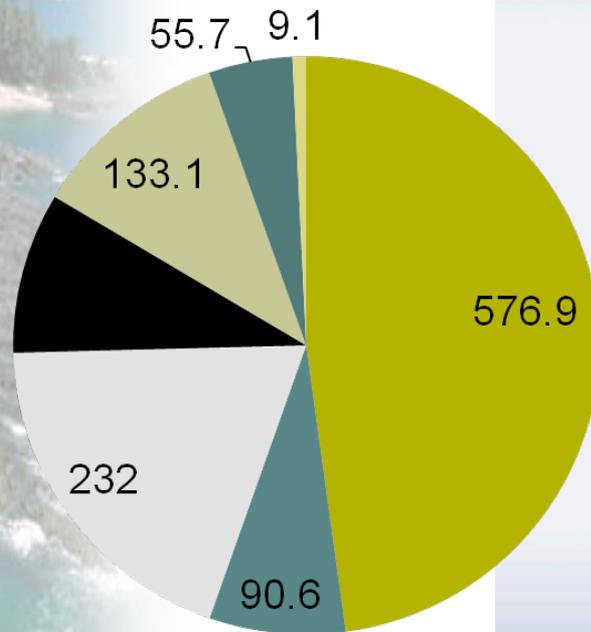
- **Traditional heat only (using boiler and steam)**
- **Newer systems are combined heat and power**
- **Cooling systems have also been added recently**

What is District Energy?



The Fundamentals: Thermal vs. Electrical

PJ



- Space Heating
- Water Heating
- Auxiliary Equipment
- Auxiliary Motors
- Lighting
- Space Cooling
- Street Lighting

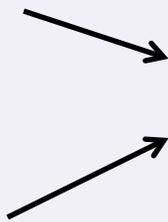
Norman: Commercial/Institutional Sector - 2008

Benefits to Communities

- *Long-term Community Investment*
- *Economic Development Tool*
- *Enhances Developer's Green Image*
- *Economic benefit through combined heat power and cooling opportunities*
- *Fuel Flexibility & Diversity (and a bridge from non-renewable to renewable fuels)*
- *Fuel Dollars Stay Within the Community*
- *Employment opportunities operating and maintaining systems*

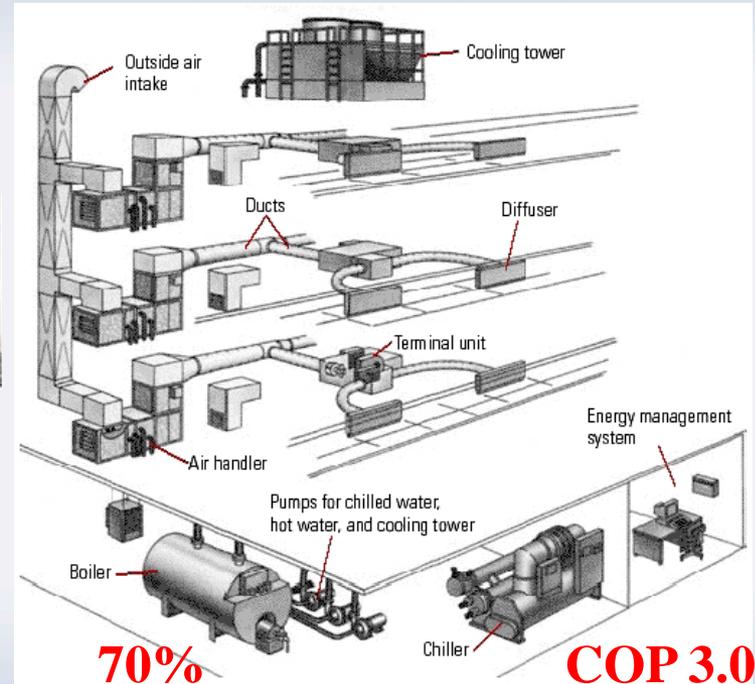
Conventional Building Systems Approach

Natural Gas:
Heating &
domestic water



Electricity:
Cooling &
other loads

Losses
50% fuel
conversion
10%
transmission/
distribution



District Energy



- Boiler system efficiency increase; +diversity
- Chiller system efficiency increase; +diversity
- Combined heat & power
- Hot water thermal storage: recover excess heat from CHP operations, discharge at off-peak hours for heating
- Chilled water thermal storage: produce chilled water at night and discharge during peak hours.
- Absorption cooling: CHP heat produces cooling
- “Bridge” to renewable fuels (solar, biomass)



Leading Edge Sustainable Community Design



- Regent Park (Toronto)



- Southeast Falls Creek (Olympic village, Vancouver)



- Calgary East Village

What Can Barrie Do?

Studies

- *Initiate a District Energy Feasibility study*
- *Require DE Connection Study with Development Approval*

Implementation Incentives

- *Allow Density Increase for DE Connection*
- *Development Fee Rebate*
- *Fast Tracking Approval Process*
- *Greater Certainty of Approvals*

What Can Barrie Do?

Regulatory

- *Mandatory Connections on City Owned Lands*
- *Ensure DE-Friendly Approval Processes*
City Controlled Buildings Must be Connected ASAP

Standards

- *Ensure Provisions for DE Pipe Included in Design of New Roads*

Financial

- Municipality Must be “Involved” to Have a Successful System
- Methodology Must be Developed to Ensure Maximum Connection Rate
- Phase Build Out of System to Match Revenue